



FOREST HEALTH PROTECTION

Pacific Southwest Region

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File No. 3420

Evaluation of Current Tree Decline and Mortality: Sherwin Creek and Glass Creek Campground, and Deadman Road; Mammoth Ranger District Inyo National Forest

Introduction

Recent Jeffrey and Lodgepole pine mortality at various locations in the Mammoth Ranger district were evaluated by Forest Health Protection (Beverly M. Bulaon, entomologist; and Martin MacKenzie, plant pathologist) at the request of Scott Kusumoto, Timber Sale Administrator. Aerial detection surveys in 2006 showed small patches of mortality in the northern sections of the Forest, with the heaviest activity occurring around previous fire damage in the very southern portion of the Golden Trout Wilderness.

On November 20, 2007 we were accompanied by Andrew Weinhart, Resource Assistant, to four locations on the west side of highway 395 that were of primary concern to the district. The objective of our visit was to identify damage agents that may be causing most of the mortality, evaluate management activities being conducted, and discuss alternatives to prevent further tree mortality while improving site quality.



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Sherwin Creek Campground

This campground (T 3 S, R 27 E, Section 1) is a large, high-use campground located outside Mammoth Lake city limits. It sits at an elevation of 7500 feet with 85 campsites. Jeffrey Pine is the dominant species in the campground, with a minor component of white fir and lodgepole pine. The campground has been detected losing about three large diameter trees annually due to a range of causes. A variety of defects were observed in all trees, including multiple leaders, mechanical wounds, deeply buried or exposed roots, crooked or impaled boles – usually from camping hardware. Most of the recent mortality was in mature (15” average DBH) Jeffrey Pine located alongside or nearby Sherwin Creek. Jeffrey Pine beetle attacks were current and successful, easily visible on marked trees. Before tree removal, stands appeared dense at approximately 160 to 200 ft/acre basal area (*see Figure 1*). At the time of our visit, the beetle-killed trees were being felled and removed from the site (*see Figure 2*).



Figure 1 and 2. 1(*left*). Campsite at Sherwin creek with current Jeffrey Pine beetle infestation. *Note:* Stand conditions are dense and overstocked. 2 (*right*). Recent removal of infested trees at Sherwin Creek.

Glass Creek Campground

This open sprawling campground (T 2 S, R 27 E, Sections 21, 22, 27; 7600 feet elevation) is a popular recreation area for ATV riders and trailers/motor-homes. Mature lodgepole pines (15 – 25 inch DBH) are the primary trees within campground boundaries and many appear to be in poor health. Regeneration is minimal and some tree crowns were progressively thinning or dying (*see Figure 3*). Two lodgepole pines were found recently mass attacked by Mountain pine beetle. Camp sites and parking spaces are not clearly marked which has created a variety of problems in the campground (*see Figure 4*). Tree damage was widespread due to vehicle abrasions, heavy foot traffic, nail or hooks, and bark removal. Limited site designation has encouraged visitors to park haphazardly in the campground; consequently, compacting soils and tree roots, and directly killing vegetation. This campground loses about four to six overstory trees per year, mostly likely predisposed by visitor use.



Figures 3 and 4. 3 (left). Lodgepole pines with top-kill in Glass Creek campground. 4 (right). No designated campsite boundaries have allowed visitors to park haphazardly, often damaging campground trees.

Deadman Road (Forest Road 2S05)

Jeffrey pine mortality was found in several groups alongside the five-mile stretch of Deadman Road. The first stop (T 2 S, R 26 E, Sections 33 & 4) was a previously logged old-growth stand that had been experiencing chronic mortality for some time (*see Figure 5*). The majority of trees in the area were greater than 30 inches in diameter, with a few pole-sized trees primarily developing around the perimeter. Trees were being attacked by Jeffrey pine beetle; however, we found three trees that were visibly blown over by strong winds. Nearby trees displayed poor crown conditions indicating possible root disease, later confirmed by signs of *Armillaria* (*Armillaria mellea*) in upturned root bases (*see Figure 6*). While a few rhizomorphs were found, there was also a significant amount of a white pocket rot, which had decayed many roots. There may be more than one fungus attacking these trees. No conks of any decay fungus were found. Another search next spring might provide evidence of a candidate decay fungus.



Figure 5 and 6. 5 (left). Recent mortality of Jeffrey pine along Deadman Road, old-growth stand. *Note:* Center trees have green but thinning crowns. 6 (right). Root plate of a wind-blown tree is shown in the second photograph.

We propose that next spring, in addition to looking for decay fungi on the root plates of windthrown trees the Service Area will establish some GPS'd photo-points along Deadman road. As changes in tree health along this road might take many years to develop, a photo record might be one of the better ways to capture the changes. Should the Forest have any other ideas for candidate photo-point locations, their entomologist and pathologist will be willing to set them up.

The second stop along Deadman Road (T 2 S, R 26 E, Section 5) was a dense patch of mature Jeffrey pine (basal area of 180 – 200 feet/acre)(*see Figure 7*). The stand was overstocked with moderate to larger diameter Jeffrey pines, and would probably benefit from some understory thinning. Over 60 trees had been attacked at this site this summer (*see Appendix A*). This was a new infestation site, not previously detected in 2006. A few trees with red needles and older pitch tubes indicated probable attack the preceding year. All successfully attacked trees were marked and firewood contractors are scheduled to fell and remove trees this winter.



Figure 7. Second stop along Deadman Road, group of recent Jeffrey pine mortality.

Discussion and Recommendations

Root disease, overstocking, and mechanical damage create stressful conditions for developing trees. Recent drought conditions further incite bark beetle attraction to susceptible stands, while warm winter temperatures perpetuate beetle populations. Thinning treatments that reduce stand basal area also help alleviate competition between trees and redistribute necessary resources more evenly. Bark beetles were found to be the primary mortality agent in the areas we visited. Timely removal of infested trees should help depress local beetle populations and provide some protection for residual trees. Areas surrounding infestation centers should also be considered for treatment as beetles are likely to spread into neighboring stands if susceptible hosts are available. According to new findings concerning the spread of *Annosum* root disease, it is currently recommended to treat all stumps greater than 12" in diameter. As an additional precautionary measure, it is best to treat all stumps greater than 8" diameter in campgrounds.

Goals for long-term resource protection and improvement would be best outlined in a comprehensive vegetation management plan for the campgrounds. Current conditions, desired future conditions, and specific measures to achieve forest objectives should be clearly stated in the plan. Other considerations such as replanting or visitor information should also be incorporated. While quick removal of hazard trees provides for visitor safety, it does not address the bigger issue of overall stand health and resource sustainability. The continual loss of trees may decrease site aesthetics and visitation frequency. Opportunities for public involvement and forest system understanding should begin and encouraged in campgrounds.

Campgrounds that initially have low density but high-value trees, such as Glass Creek may wish to consider alternative methods for resource protection. Besides infested tree removal, application of insecticides on green non-infested trees before beetle flight has been found to be effective for short-term protection when properly implemented. In Glass Creek, cording off large areas surrounding selected trees and specifically marking areas where vehicles could drive or park, would greatly help decrease mechanical injury. Fliers or notices that inform visitors to reduce damage to campground trees could be provided by Forest Health Protection upon request. Public awareness and education in the campgrounds are simple, germane steps towards generating responsibility and stewardship.

Information and Public Education

Upon seeing the camper caused damage to many of the residual trees, we were reminded of an old FS publication: “Trees need their skin too!” Although the publication was last printed in 1976 its message is just as relevant over 30 years later. After researching the State and Private Regional Office archives we found several copies of this publication. Copies have been included for your evaluation. Although our supply is limited there would be enough to attach a few to campground notice boards. We invite you to evaluate this publication and answer these questions! Has the time come to either update, or reprint this publication? Or: would we have more impact by producing a poster, with “Man’s Inhumanity to Trees” as its theme? Would poster development fall within the duties of the San Dimas Technology & Development Center?



“Trees need their skin to!”

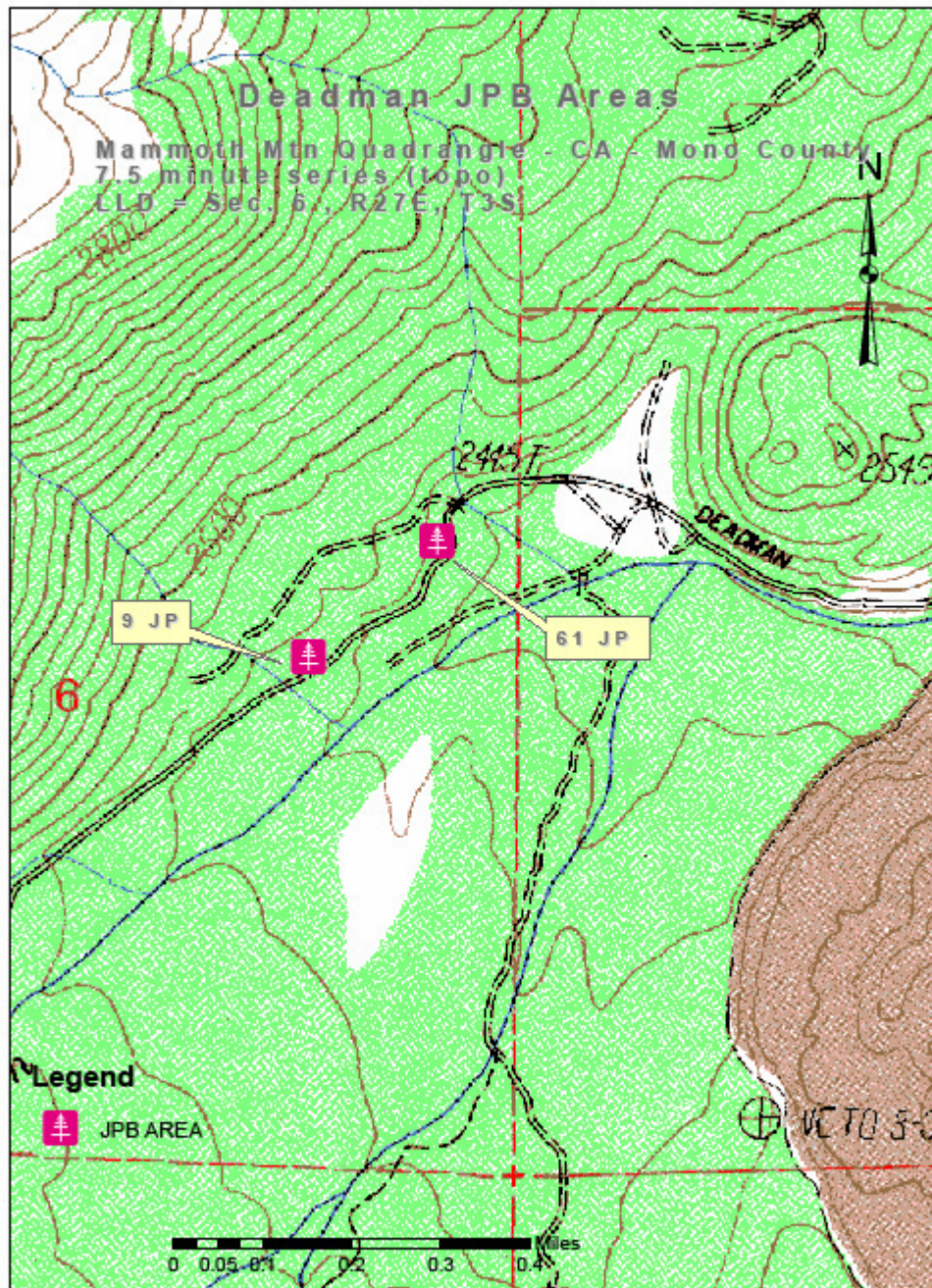
Mammoth Ranger District is to be commended for their continual efforts to stay ahead of their recent beetle infestations with timely hazard/infested tree removals. We support their efforts and are happy to provide further assistance where needed concerning our observations and recommendations. Please contact us if you have any questions or concerns.

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enclosures: Six copies of "Trees need their skin too!"



Appendix A. Map of two Jeffrey Pine Beetle infestations along Deadwood Road – captions indicate number of current year beetle-killed trees. Both sites were mature, dense stands of predominantly large-diameter Jeffrey Pine.